

## ABSTRACT OF THE DISCLOSURE

A reliable optical transmission system with an improved signal control mechanism that avoids abrupt power variations of light beams, thereby preventing optical supervisory channel (OSC) signals from experiencing errors. An optical amplifier amplifies main signals under the control of an optical amplifier controller, which spends a first predetermined time to raise the output power of the optical amplifier up to a desired level. A pump light source produces a pump beam for injection to a fiber-optic transmission line so as to make it serve as an amplifying medium. The pump light source is controlled by a pump light source controller that spends a second predetermined time to raise the pump beam to a desired power level. This stepwise start-up process of the amplifier power and pump beam power prevents OSC signals from experiencing abrupt power variations.